fessorship of medicine; Dr. Gaskell, to that of the professorship of zoology and comparative anatomy; Dr. Keynes, to that of the professorship of political economy; Dr. W. N. Shaw, to that of the Cavendish professorship of physics; Prof. J. J. Thomson, to that of the professorship of mechanism and applied mechanics; Prof. C. S. Sherrington, to that of the professorship of physiology; Prof. Nuttall, to that of the professorship of pathology; the Hon. B. A. W. Russell, to that of the professorship of mental philosophy and logic; and Mr. A. E. Shipley, of Christ's College, to that of the professorship of agriculture.

The teachers' training syndicate has appointed Dr. Rouse, of Christ's College, O. Browning, of King's College, and J. Wallis, of Christ's College, as delegates to attend the International Congress on School Hygiene to be held in London next May.

PROF. H. McLEOD, F.R.S., is to receive the honorary degree of LL.D. from the University of St. Andrews at the graduation ceremonial on April 2.

PROF. THOMAS LOVEDAY, professor of philosophy at the South African College, Cape Town, has been appointed librarian to the University of Sheffield.

ARRANGEMENTS have been made for establishing a distinct department of the Board of Education to deal with all grades of education in Wales and Monmouthshire. Mr. A. T. Davies has been appointed permanent secretary of this Welsh Education Department, and Mr. O. M. Edwards chief inspector for Welsh education, and both will be directly responsible to the president.

A REUTER message from Pittsburg announces that the Western University of Pennsylvania will confer the honorary degree of LL.D. upon the following gentlemen, among others, who will be present at the Founders' Day celebrations of the Carnegie Institute on April 13 next:—Sir Robert Ball, Sir William Turner, K.C.B., Sir William Preece, K.C.B., Signor Marconi, Mr. Chalmers Mitchell, Dr. John Rhys, and the Rev. E. S. Roberts, master of Caius College, Cambridge.

A RECENT issue of *Science* contains further striking instances of the importance attached to higher education by wealthy American citizens. Rensselaer Polytechnic Institute has received a gift of 200,000*l*. from Mrs. Russell Sage. The money will be used for the school of mechanical and electrical engineering. Mrs. Sage has also given 200,000*l*. to the Emma Willard School of Troy. The establishment and permanent endowment of Peabody College for Teachers, at Nashville, Tennessee, has also been assured. The Tennessee legislature has just passed a Bill providing the college with 50,000*l*. The city of Nashville has given 40,000*l*., and the county of Davidson 20,000*l*. These gifts have been made in response to a proposition from the Peabody Education Board to endow the college with 200,000*l*. All the conditions imposed by the Peabody Board have now been complied with, and it only remains for that board to organise the institution. The college will have 310,000*l*. in money. In addition to this, the University of Nashville has given the grounds and buildings now occupied by the college, valued at 50,000*l*. It is understood also that gifts will be received at once from other sources amounting to about 200,000*l*. We also notice that by the will of Arthur Mills, of Brookline, Harvard University will ultimately receive 30,000*l*.

IT is satisfactory to learn from the annual report that the Geographical Association, which is doing very useful work in promoting the study of geography in schools by scientific methods, is making substantial progress. In many schools geography is still regarded as a collection of names and phrases which convey no real meaning to the pupils, but, thanks largely to the efforts of the association, both teachers and examiners are beginning to realise that geography must be approached in the spirit of practical inquiry if it is to be of any value as a school subject. Ordnance Survey maps can now be obtained by schools at greatly reduced prices upon application to the Director-General of the Ordnance Survey, Southampton, and suitable maps to supplement these will no doubt be suggested by the committee appointed by the association to consider the substance and scope of atlases for elementary schools. A special committee on lantern-slides has also been appointed. This committee hopes to prepare series of slides illustrative of certain aspects of geography, as well as of various countries. It is specially anxious to obtain sets of views of different districts in the United Kingdom illustrative of their scenery and social conditions, as well as from British and other lands beyond the seas. Such illustrations, combined with exercises on the construction and use of maps, practical measurements with tape and plane-table, meteorological observations recorded day by day, and the spirit of "Seek and ye shall find" permeating the whole of the work, will transform geography from a dismal study into a living science by which both the imaginative and the critical faculties may be cultivated. We have no sympathy with the old order of things, but the change which the Geographical Association is bringing about gives decided satisfaction.

THE provisional programme of the Federal Conference on Education, organised by the League of the Empire, and to be held in London from May 24 to June 1, includes the following educational subjects:—Teachers: (1) comparison of (*a*) the provisions for the supply and the training of elementary teachers, and of (*b*) the conditions of their work in the United Kingdom and other countries of the Empire and Crown colonies; (2) similar comparison in the case of secondary teachers; (3) practicability of temporary interchange of teachers and of inspectors between the United Kingdom and other countries of the Empire and Crown colonies. The relations between secondary and primary schools in the various countries of the Empire. Means of establishing a system of mutual recognition of equivalent standards of attainment in the several countries of the Empire in connection with primary, secondary, and university education. Cooperation in educational publications: (1) scheme of the League of the Empire for Imperial text-books in history; (2) means for ensuring correctness in text-books dealing with geography, or in which local knowledge is required. Cooperation in school work: (1) the formation of a central exhibition of industrial or other school work; (2) the organisation of the exchange of school work and specimens between departments, museums, and between individual schools on a permanent basis. School subjects: (1) the English language: (*a*) reading (literature), (*b*) composition, (*c*) pronunciation; (2) geography in its relations to: (*a*) history, (*b*) discovery and commerce; (*c*) the growth of the Empire, illustrated by lantern slides and other means; (3) encouragement of nature-study. Education of non-British races: comparison of ideals, methods, and standards in various parts of the Empire. Other subjects which may be discussed if time allows: (*a*) cadet corps and military training; (*b*) educational facilities in sparsely populated districts; (*c*) educational treatment of poor law and reformatory children; (*d*) civic and moral education; (*e*) metric system of weights and measures; (*f*) school gardens.

SOCIETIES AND ACADEMIES.

LONDON.

Mineralogical Society, January 29.—Prof. H. A. Miers, F.R.S., president, in the chair.—Experiments bearing on the order of crystallisation of rock-constituents: Prof. H. A. **Miers**. The general results of experiments made by Miss F. Isaac and Prof. Miers with mixtures of salol and betol in all proportions were described; the experiments have established the supersolubility curves even beyond the points where they cross below the eutectic temperature. Owing to the fact that the main separation of crystals in the cooling mixtures takes place only when the liquids have been supercooled to temperatures given by the supersolubility curves, it has been found (1) that in general the mixtures do not solidify as a eutectic mixture; (2) that, according to the conditions of supercooling, either substance could be made to crystallise before the other in mixtures approaching the eutectic in composition. It was suggested that these results are applicable to the solidification of many rocks and alloys.—Serpentine rock from the Tarnthaler Köpfe, Tyrol: Dr. A. P. **Young**. The minerals found in the serpentine are diopside, tremolite, clinochlore, picotite, magnetite, iron pyrites, and a fibrous mineral referred to antigorite. The latter mineral is regarded as holding a place between the micas and chlorites. On the surface of the serpentine are projecting bastite pseudomorphs coated with films of silvery lustre. The serpentine is a non-foliated intrusive core which on the borders is highly foliated and passes into talc-bearing phyllites.—A simple tabular arrangement of the thirty-two crystallographic classes: Dr. J. W. **Evans**. The table is based on the character of the symmetry of the principal zone axis or zone axes. Each column contains classes with the same rotational symmetry round the axis, and each row those which agree in the other symmetrical characters of the axis.—A new model of crystal refractometer: Dr. G. F. Herbert **Smith**. This instrument is identical in principle with that previously described, and is intended for use with large mineral specimens and mounted gem-stones. No part extends above the level of the plate holding the dense glass hemisphere. Further, the optical combination has double the focal length of the earlier form, and provides, consequently, greater refinement.—Isomorphism as illustrated by certain varieties of magnetite: Prof. B. J. **Harrington**. Analyses are given of specimens of magnetite from St. Joseph du Lac, Canada, and from Magnet Cove, Arkansas, both showing the unusual combination of octahedron and trapezohedron {311}. The Canadian specimen contained about 5 per cent. of TiO_2, 8 per cent. of MnO, and 3 per cent. of MgO, and the specimen from Arkansas about 10 per cent. of Al_2O_3, 2 per cent. of TiO_2, 2 per cent. of MnO, and 9 per cent. of MgO.—Mr. **Fleischmann** exhibited a collection of zeolites from Japan, Dr. **Evans** an objective giving a flat field with convergent light, and Prof. **Miers** a goniometer to be used for the measurement of the refractive indices of cooling solutions, for which purpose it is provided with means for maintaining a constant temperature for any desired period.

Zoological Society, February 5.—H.G. the Duke of Bedford, K.G., president, in the chair.—Mammals collected in Mindanao, Philippines, by Mr. M. P. Anderson for the Duke of Bedford's exploration of eastern Asia: O. **Thomas**. Seven species were mentioned, one of which was new, and is designated *Crunomys melanius*, sp.n.—The origin of the lateral horns of the giraffe in fœtal life on the area of the parietal bones: Prof. E. Ray **Lankester**. The author described and showed the exact relation of the lateral horns in the fœtus taken from the giraffe which died last spring in the society's gardens. It was demonstrated that the lateral horn of the giraffe was exclusively in origin a part of the fibrous osteogenetic tissue of the parietal bone of which it was a part, and had no connection whatever with the frontal. Thus the statement made by Sir Richard Owen in his account of a new-born giraffe, in a paper read before the society in 1839, was finally shown to be based on an unfortunate accident. Owen had cut out the horn-bearing area of the skull, and after an interval of time had reversed the relations of the excised piece of bone, taking frontal for parietal and parietal for frontal. The author expressed the opinion that the *parietal* lateral horn of the giraffe could not be considered to be the same morphological unit as the frontal lateral horn of the okapi.—Parallel hair-fringes and colour-striping on the face of fœtal and adult giraffes: Prof. E. Ray **Lankester**. The author described a remarkable colour-banding or striping of the hairy covering of the face in the fœtal giraffe, and showed that similar dark and light striping occurred in a very marked form in adult giraffes, though not in all individuals.—The existence of rudimentary antlers in the okapi; Prof. E. Ray **Lankester**. A description was given of the polished tip or apex of the okapi's horn which breaks through the integument. The author showed that transverse fissures or incisions were produced one behind the other in the naked apex, tending to cut off in succession a series of small bony caps, which he regarded as rudimentary antlers. He expressly refrained from concluding that this formation of minute antler-caps was to be regarded as genetically connected with the antler-formation of the Cervidæ, though such a connection was possible.—A new Amazonian tree-frog, *Hyla resinifictrix*, closely related to *H. venulosa*, but distinguished by fully half-webbed fingers: G. A. Boulenger, on behalf of Dr. E. A. **Goeldi**. This frog was remarkable for its habit of making good-sized basins of resinous substances in hollow branches of high trees, in which water collects, which served as a nursery for the eggs and larvæ. The frog collected the resin from the bark of certain trees, such as the aromatic "brewbranco" (*Protium heptaphyllum*).—The collection of Cumacea in the Copenhagen Museum: Dr. W. T. **Calman**. Altogether thirty species were dealt with, of which twenty-five were described as new. The majority of the specimens were derived from collections made in New Zealand and the Gulf of Siam by Mr. H. Suter and Dr. Th. Mortensen respectively.

Chemical Society, February 7.—Prof. R. Meldola, F.R.S., president, in the chair.—The rapid electro-analytical deposition and separation of metals, part i., the metals of the silver and copper groups and zinc: H. J. S. **Sand**. The metals studied are silver, mercury, copper, bismuth, lead, cadmium, and zinc. With the exception of the separation silver-mercury, each metal has been successfully separated from all the others by the method of graded potential. In order to separate silver from mercury, the metals were deposited together, converted into their cyanides, and these separated in the usual way by means of their different behaviour to acids. The time required for the depositions in these experiments varied between five and fifteen minutes.—The alkaloids of ergot: G. **Barger** and F. H. **Carr**. It is shown that ergotoxine, $C_{35}H_{41}O_6N_5$, is the active principle of ergot, and Kraft's assertion that the crystalline alkaloid, ergotinine, is a dehydrated ergotoxine is confirmed. Ergotinine is physiologically inactive when pure.—Influence of substitution on the formation of diazoamines and amino-azo-compounds, part vi., the partially methylated 4 : 6-diamino-*m*-xylenes: G. T. **Morgan** and Miss F. M. G. **Micklethwait**. The authors have methylated progressively 4 : 6-diamino-*m*-xylene, and have studied the action of diazonium salts on the products.—The constitution of umbellulone, part ii., the reduction of umbellulonic acid: F. **Tutin**. By further study of the oxidation products of this ketone further confirmation of the constitutional formula originally assigned to it has been obtained.—The reduction of hydroxylaminodihydroumbelluloneoxime: F. **Tutin**. Derivatives of aminotetrahydroumbellulylamine, obtained by the reduction of this oxime, are described.—Studies on optically active carbimides, part v., the aryl esters and the amides of *l*-menthylcarbamic acid: R. H. **Pickard** and W. O. **Littlebury**. Eleven aryl esters and eighteen amides of *l*-menthylcarbamic acid were described, and rotations of these when dissolved in chloroform and pyridine compared. Attention was directed to the approximately constant molecular rotation given by certain derivatives of menthylamine and menthol.—Some constituents of natural indigo, part i.: A. G. **Perkin** and W. P. **Bloxam**. Three brown amorphous substances, $C_{16}H_{12}O_3N_2$, $C_{24}H_{22}O_5N_3$, and $C_{16}H_{14}O_4N_2$ are described, which on treatment with potassium hydroxide yield anthranilic acid. It is considered possible that these brown compounds are derivatives or condensation products of indoxyl, which are formed from indican during the process of manufacture.—The occurrence of isatin in some samples of Java indigo: A. G. **Perkin**. The quantity of isatin present was exceedingly small, and in many samples it appeared to be absent; but its occurrence occasionally is interesting, as it indicates that the formation of indirubin during the manufacture of natural indigo follows the well-known synthesis of von Baeyer.—The absorption spectra of benzoic acid, the benzoates, and benzamide: W. N. **Hartley** and E. P. **Hedley**. The absorption curves of benzoic acid, potassium and silver benzoates, and benzamide have been drawn from the photographs of the spectra of these substances. The absorption bands of the different substances are all obviously related to the bands in benzoic acid, and the absorption is due to the benzene ring (compare Baly and Collie, Trans. Chem. Soc., 1905, lxxxvii., 1332).—The absorption spectra of phthalic, *iso*phthalic, and terephthalic acids, phthalic anhydride, and phthalimide:

W. N. **Hartley** and E. P. **Hedley.** *o*-Phthalic acid gives an absorption curve of the character that might be expected from a comparison with that of benzoic acid. *iso*Phthalic acid has a shallow band in the same position as that of phthalic acid, but less persistent. Terephthalic acid has no band, but merely an extension at or near where a band might be expected.—$\alpha\alpha\gamma$-Trimethyl- and $\alpha\alpha\gamma\gamma$-tetramethyl-tricarballylic acids and $\alpha\delta$-dimethylbutane-$\alpha\beta\delta$-tricarboxylic acid: H. **Henstock** and C. H. G. **Sprankling.**—A reaction of certain colouring matters of the oxazine series: J. F. **Thorpe.**—The alkylation of *d*-fructose: T. **Purdie** and D. McLaren **Paul.** The series of derivatives of fructose obtained by methylating this ketose is described.—A simple apparatus, with stirrer, for treating a liquid at its boiling point with two or more gases: N. L. **Gebhard.**—Note on the arsenates of lead and calcium: S. **Pickering.**—Camphor-β-sulphinic acid and camphorylsulphonium bases: S. **Smiles** and T. P. **Hilditch.** The sulphinic acid and the sulphonium bases prepared exhibit a strong lævorotatory power in distinction from the dextrorotatory sulphonic acid from which they were obtained. The authors conclude that this change is caused by the conversion of the sulphur from the sexavalent to the quadrivalent state.—The condensation of salicylamide with aryl aldehydes: C. A. **Keane** and W. W. S. **Nicholls.** Benzaldehyde, when heated with salicylamide in presence of hydrochloric acid or of sodium acetate, condenses to form a cyclic compound of the oxazine group, namely, 2-phenyl-1:3-benzoxazone. Homologues of this were prepared by condensing salicylamide with anisaldehyde and *o*-methoxybenzamide with benzaldehyde.—The condensation of diethylmalonamide with aldehydes: H. **Burrows** and C. A. **Keane.** Diethylmalonamide, when heated with benzaldehyde in presence of hydrochloric acid, condenses similarly to salicylamide (see note on preceding paper) to form a cyclic compound of the pyrimidine group, 4:6-diketo-2-phenyl-5:5-diethylhexahydropyrimidine.

Mathematical Society, February 14.—Sir W. D. Niven, vice-president, in the chair.—Prof. A. R. **Forsyth** gave an account of the life and scientific work of the late Colonel A. Mannheim, an honorary foreign member of the society.—Repeated integrals: Dr. E. W. **Hobson.** When Riemann's definition of integration is adopted, it may happen that the double integral of a function does not exist, although the repeated integral does exist if the integrations are performed in a certain order. The more extended definition of integration introduced by Lebesgue throws light on this and other anomalies in the theory of the relations of double integrals to repeated integrals.—The projective geometry of a binary quartic and its Hessian: Prof. E. B. **Elliott.** The quartic is regarded as the equation of four straight lines drawn through the origin, and is represented by the four points in which these lines meet a chosen conic drawn through the origin. The original quartic and its Hessian are members of a pencil of quartics, each represented by four points on the conic, and all the quadrangles which are thus obtained have the same harmonic triangle. Any quadrangle of the set is determined by the harmonic triangle and one vertex of the quadrangle. With this vertex a certain point on a chosen side of the harmonic triangle can be associated by a linear construction, and the quadrangle is determined by this point and the harmonic triangle. The determining point for the Hessian can be associated with that for the original quartic by a linear construction which is given in the paper.—A formula for the sum of a finite number of terms of the hypergeometric series when the fourth element is equal to unity: Prof. M. J. M. **Hill.** The formula includes the well-known expression for the sum of the series, and gives an exact value for the remainder after s terms.—Groups defined by the order of two generators and the order of their commutator: Prof. G. A. **Miller.**—An informal communication on hyper-exponential numbers was made by Lieut.-Colonel A. **Cunningham.**

DUBLIN.

Royal Irish Academy, January 14.—Dr. F. A. Tarleton, president, in the chair.—Infection of bovines by the avian tubercle bacillus: Prof. **Mettam.** The paper gave an account of experiments with cultures of avian tubercle bacillus. Injected into the auricular vein of a heifer, the virus produced a fatal infection. In the other experiment a portion of a culture was given by the stomach-pump to a young bull. The animal became infected as shown by the tuberculin test. It recovered from the infection, however, because just prior to slaughter the animal was retested, but did not respond, and the lesions found at *post-mortem* were sterile, and failed to produce a lesion in the rabbit in which they were inoculated. Both animals were shown to be free from tuberculosis prior to experiment by the use of tuberculin. The same author also read a note upon the development of tubercles in the lacteals of the villi of the small intestine in rabbits infected by feeding with tuberculous material from a bovine source. The tubercle has the same anatomical structure as that developing in the pulmonary capillaries or liver sinusoids—epithelioid cells of mononuclear leucocyte origin, lymphocytes, and giant cells. The epithelium of the villus may be intact.—The general solution in integers of the indeterminate equation $aX^3+bY^3+cZ^3+dXYZ=0$: Dr. T. **Stuart.** The solution of this equation (or of special cases of it) has been considered by Sylvester, Lucas, Desboves, and other writers. The only known method (save that of trial) for finding a solution is by means of artificially constructed identities. In this paper the various identities and theorems obtained by previous writers are coordinated and shown to be deducible from elementary geometrical considerations, and some statements of Sylvester and Desboves are also shown to require considerable modification. The geometrical method of attacking the problem leads to important results in high factorisation.

January 28.—The river Shannon—its present regimen and geological history: J. R. **Kilroe.** The river admits of easy navigation, falling only about 150 feet in 140 miles. It commenced to flow upon a plain of post-Eocene date 2500 feet to 3000 feet above present datum, and a very trifling inclination to the north, west, or south would have permanently deflected the drainage. Retention of its course alone could have kept the gorge at Killaloe open, but at some time shortly prior to the Glacial epoch the river seems to have abandoned the gorge, until the ancient bed by Killaloe was lowered, at certain points below the sea-level, by glacier erosion. Upon the disappearance of the ice the river resumed its original course.

PARIS.

Academy of Sciences, February 11.—M. A. Chauveau in the chair.—The preparation of acylcampholic esters, and on a new method of formation of phenyloxyhomicampholic acid: A. **Haller** and Charles **Weimann.** The cyanocampholic esters treated with alkyl magnesium iodides yield imido-compounds, the latter, with sulphuric acid, giving ketones. The cyanogen group of the cyanocampholic ester is here replaced by the group —CO.R, R being the alkyl group of the magnesium compound. Numerous examples of the application of this reaction are given.—The mechanism of the transformations in normal media of the Crustaceæ: E. L. **Bouvier.** At the commencement of the Quaternary epoch the formation of the Isthmus of Panama caused a separation of the crustaceans in this region, and each group has developed in a normal medium since that time. Typical species are compared to show the amount of the differences which have arisen during this period.—Has the African elephant a pleural cavity? Alfred **Giard.** The *post-mortem* examination of an African elephant, recently described by Mme. M. Phisalix, would appear to show that the African elephant has a pleural cavity. In the case of the Asiatic elephant there is clear evidence that the visceral and parietal layers of the pleura are closely connected together by matted elastic tissue, and it is highly probable that this is also the case in the African elephant. The diagnosis of pleurisy on account of thickness of the pleura and its adherences would, therefore, appear to be a mistaken one.—Various syntheses of dimethyl*iso*propyl-carbinol: Louis **Henry.** The α-chloro-*iso*butyric aldehyde reacting with magnesium methyl bromide gives the expected pinacolic alcohol, but its tertiary isomer, dimethyl*iso*propyl carbinol. A theory of this reaction, supported by experimental facts, is proposed.—Observations of the sun made at the Observatory of Lyons during the fourth quarter of 1906: J.

Guillaume. The results are summarised in three tables showing the number of spots, their distribution in latitude, and the distribution of the faculæ in latitude.—The problem of Dirichlet: H. **Lebesgue.**—The non-applicability of two continuous regions of n and $n+p$ dimensions: René **Baire.**—The channelled spectra of parallel gratings: Georges **Meslin.** A mathematical discussion of the various hypotheses which have been proposed in this connection, and in particular that due to M. Garbe, whose theory is shown to give a complete explanation of the phenomena.—A singular state of matter observed in a dissolved chromic salt: Albert **Colson.**—The alkylation of metallic cyanides: H. **Guillemard.**—The catalytic reduction of unsaturated ethyl esters: G. **Darzens.** An application of the Sabatier and Senderens reaction to the preparation of ethyl propionate, isovalerate, and pelargonate from the corresponding unsaturated esters. The addition of two atoms of hydrogen to a whole series of acids of the type $R.(CH_3).C:CH.CO_2H$, a general method for the preparation of which is described, can also be effected in this way. Examples of the application of the method in the aromatic and hydroaromatic series are also given.—The transformation of primary saturated alcohols into the corresponding monobasic acids: H. **Fournier.** Alkaline permanganate has been shown to give oxalic acid with some primary alcohols. The author shows that if the conditions prescribed by him are followed, a yield of acid amounting to 75 per cent. of the theoretical can be obtained.—The presence of aldehydes in cheese and the part played by them in the formation of bitterness: A. **Trillat** and M. **Sauton.** Experiments are given establishing the presence of aldehydes in cheese, and also the existence of a relation between the quantity of aldehydes and the bitterness of the cheese.—Alternating currents of varying periods corresponding to musical sounds; the physiological effects of rhythmic alternating currents: Maurice **Dupont.**—Remarks on the preceding paper by M. **d'Arsonval.**—Some phenomena of biological adaptation by rhythmical anticipation: H. **Piéron.**—Ether anæsthesia; parallel with chloroform anæsthesia: Maurice **Nicloux.** A quantitative study of the distribution of ether in various organs of the body during anæsthesia. These quantities are greater with ether than with chloroform, and the ether is eliminated more rapidly.—Lymphosarcoma in the dog: A. **Borrel.**—The discovery of the marine Aquitanian in the middle part of the Rhone valley: L. **Joleaud.**—Some geothermal measurements effected in the Pas-de-Calais basin: Félix **Leprince-Ringuet.**

DIARY OF SOCIETIES.

THURSDAY, FEBRUARY 21.

ROYAL SOCIETY, at 4.30.—The Estimation of Chloroform in the Blood of Anæsthetised Animals: G. A. Buckmaster and J. A. Gardner.—On Electrical Seed-Testing: Prof. T. Johnson.—On Longitudinal Symmetry in Phanerogamia: Prof. Percy Groom.—On the Inheritance of Flower-Colour in *Antirrhinum majus*: Miss M. Wheldale.

ROYAL INSTITUTION, at 3.—The Minute Structure of Igneous Rocks and their Significance: Alfred Harker, F.R.S.

CHEMICAL SOCIETY, at 8.30.—The Constitution of Oxyazo-compounds: W. B. Tuck.—The Influence of Solvents on the Rotation of Optically Active Compounds, Part ix., A New General Method for Studying Intramolecular Change: T. S. Patterson and A. McMillan.—The Reduction Products of ortho- and para-Dimethoxybenzoin: J. C. Irvine and A. M. Moodie.—Replacement of Halogens by Hydroxyl, i., The Hydrolytic Decomposition of Hydrogen and Sodium Monochloroacetates by Water and by Alkali, and the Influence of Neutral Salts on the Reaction Velocities: G. Senter.—The Reaction of Ammonium Salts with the Constituents of the Soil: A. D. Hall and C. T. Gimingham.

LINNEAN SOCIETY, at 8.—The Percy Sladen Trust Expedition to the Indian Ocean, Introduction, Part i., Ceylon to Mauritius: J. Stanley Gardiner.—Land Nemerteans, with a Note on the Distribution of the Group: R. C. Punnett.—Land Crustaceans: L. A. Borradaile.—Hymenoptera: P. Cameron.—Dragon Flies: F. F. Laidlaw.—Fourmis des Seychelles, Admirantes, Farquhar et Chagos: Prof. A. Forel.—Pycnogonidæ: G. H. Carpenter.

INSTITUTION OF ELECTRICAL ENGINEERS, at 8.—Lecture on "Modern Theory of Conduction of Electricity in Metals": Prof. J. J. Thomson, F.R.S.

FRIDAY, FEBRUARY 22.

ROYAL INSTITUTION, at 9.—Flame in Gas and Petrol Motors: Dugald Clerk.

PHYSICAL SOCIETY, at 5.—Transformer Indicator Diagrams: Prof. Lyle.—Ionisation of Gases by α Particles of Radium: Prof. Bragg.—A Micromanometer: B. Roberts.

INSTITUTION OF CIVIL ENGINEERS, at 8.—Impurities in Boiler Feed-water; their Nature, Effect and Elimination: F. E. Walker.

SATURDAY, FEBRUARY 23.

ROYAL INSTITUTION, at 3.—Röntgen, Kathode, and Positive Rays: Prof. J. J. Thomson, F.R.S.

THE ESSEX FIELD CLUB (at Essex Museum of Natural History, Stratford), at 6.30.—Notes on Dr. Fletcher's Report on the Sanitary Circumstances of the Village of Coggleshall: T. V. Holmes.—Botanical Surveying in Brittany; an Account of Ecological Work on the Bouche d'Erguy: T. G. Hill.

MONDAY, FEBRUARY 25.

ROYAL GEOGRAPHICAL SOCIETY, at 8.30.—Inland Waterways: G. G. Chisholm.

INSTITUTE OF ACTUARIES, at 5.—Comparative Bonuses under Whole Life and Endowment Assurances: H. J. Rietschel.

TUESDAY, FEBRUARY 26.

ROYAL INSTITUTION, at 3.—The Visual Apparatus of Man and Animals: Prof. William Stirling.

INSTITUTION OF CIVIL ENGINEERS, at 8.—On the Limits of Thermal Efficiency in Internal-Combustion Motors: Dugald Clerk.

WEDNESDAY, FEBRUARY 27.

GEOLOGICAL SOCIETY, at 8.—On the Lower Ordovician Succession in Scandinavia: W. G. Fearnsides.—The Occurrence of Pseudomorphous Pebbles of Pyrites at the Crown Reef Mine, Witwatersrand: C. Baring Horwood.

SOCIETY OF ARTS, at 8.—Modern Type-writers and Accessories: Arthur E. Morton.

THURSDAY, FEBRUARY 28.

ROYAL SOCIETY, at 4.30.—*Probable Papers*: On the Dispersion in Artificial Double Refraction: L. N. G. Filon.—The Occlusion of the Residual Gas by the Glass Walls of Vacuum Tubes: A. A. Campbell Swinton.—The Theory of Correlation for any Number of Variables, treated by a New System of Notation: G. Udny Yule.

SATURDAY, MARCH 2.

ROYAL INSTITUTION, at 3.—Röntgen, Kathode, and Positive Rays: Prof. J. J. Thomson, F.R.S.

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